CLAIMS

1. Method for use in a Generic Packet Radio System backbone network to downstream transport an internet packet being destined to a terminal (T) from a gateway GPRS support node (GGSN) via a serving GPRS support node (SGSN) to a radio network controller (RNC), said internet packet comprises a header that comprises an address (IP-T) of said terminal (T), **characterized** in that said method comprises the steps of:

- transforming said header of said internet packet into a backbone header, by said gateway GPRS support node (GGSN); and

- inserting in a said backbone header by said gateway GPRS support node (GGSN) and said serving GPRS support node (SGSN), respectively, an address of said serving GPRS support node and an address of said radio network controller; and

- forwarding said internet packet after each said insertion from said gateway GPRS support node (GGSN) via said serving GPRS support node (SGNS) to said radio network controller (RNC) according to a respective address in said backbone header; and

- keeping said address of said terminal (IP-T) during said forwarding by comprising by said gateway GPRS support node (GGSN) in said internet packet an address extension header (EXT); and inserting in said address extension header (EXT) said address of said terminal (IP-T); and by said radio network controller (RNC) transforming again said backbone header into said header of said original internet packet and extracting, after said forwarding, from said address extension header (EXT) said address of said terminal (IP-T) for insertion of it again in said header in order to enable forwarding of said internet packet to said terminal (T) according to said address of said terminal (IP-T) in said header.

2. Method for use in a Generic Packet Radio System backbone network to upstream transport an internet packet being destined to a terminal (T) from a radio network controller (RNC) via a serving GPRS support node (SGSN) to a gateway GPRS support node (GGSN), said

5   internet packet comprises a header that comprises an address (IP-T) of said terminal (T), **characterized** in that said method comprises the steps of:

- transforming said header into a backbone header by said radio network controller (RNC); and

10   - inserting in said backbone header by said radio network controller (RNC) and said serving GPRS support node (SGSN), respectively, an address of said serving support node and an address of said gateway support node; and

- forwarding said internet packet after each said insertion

15   from said radio network controller (RNC) via said serving GPRS support node (SGSN) to said gateway GPRS support node (GGSN) according to a respective address in said backbone header; and

- keeping said address of said terminal (IP-T) during said forwarding by comprising by said radio network controller (RNC) in said

20   internet packet an address extension header (EXT); and by inserting in said address extension header (EXT) said address of said terminal (IP-T); and by said gateway support node transforming said backbone header again into said header and extracting from said extension header (EXT) after said forwarding said address of said terminal (IP-T) in order to be

25   inserted again in said header and to enable further forwarding to said terminal (T) according to said address of said terminal (IP-T) in header.

3. The method according to anyone of claim 1 and claim 2, characterized in that said method further comprises the steps of,

30   respectively, downstream and upstream, transporting said internet packet between said gateway GPRS support node (GGSN) via said serving

GPRS support node (SGSN) and said radio network controller (RNC) according to the Internet Protocol Version 6 whereby said backbone header is an internet protocol header according to the internet protocol Version 6.

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    4. The method according to claim 3, characterized in that said method further comprises the steps of, respectively, downstream transporting said internet packet from said radio network controller (RNC) to said terminal (T) and upstream transporting said internet packet from gateway GPRS support node (GGSN) to said terminal (T) according to the Internet Protocol Version 6 whereby said header is an Internet Protocol Version 6 header and whereby said step of transforming said header into said backbone header and said step of transforming said backbone header into said header becomes a step of equalizing both header definitions.

    5. The method according to claim3, characterized in that said method further comprises the steps of, respectively, downstream transporting said internet packet from said radio network controller (RNC) to said terminal (T) and upstream transporting said internet packet from gateway GPRS support node (GGSN) to said terminal (T) according to the Internet Protocol Version 4 whereby said header is an Internet Protocol Version 4 header and whereby said step of transforming said header into said backbone header and said step of transforming said backbone header into said header becomes a step of mapping one header format onto another header format.

    6. The method according to claim 5, characterized in that said method further comprises defining said address extension header (EXT) as an Internet Protocol Version 4 address extension header being referred to in said backbone header of said internet packet and during

said steps of transforming said header into said backbone header also inserting an Internet Protocol Version 4 source address of said internet packet in said address extension header (EXT).

5   7. The method according to claim 5, characterized in that said method further comprises defining said address extension header (EXT) as an Internet Protocol Version 6 address extension header and during said step of transforming said header into said backbone header, also mapping and inserting an Internet Protocol Version 4 source address of

10   said internet packet in a source field of said Internet Protocol Version 6 backbone header.

       8. The method according to claim 5, characterized in that said method further comprises defining said address extension header (EXT)

15   as an Internet Protocol Version 6 address extension header and during said step of transforming said header into said backbone header also mapping and inserting an Internet Protocol Version 4 source address of said internet packet in said Internet Protocol Version 6 address extension header (EXT).

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       9. A gateway GPRS support node (GGSN) in a Generic Packet Radio System backbone network to downstream transport and to upstream transport an internet packet being destined to a terminal (T), respectively, from said gateway GPRS support node (GGSN) via a serving

25   GPRS support node (SGSN) to a radio network controller (RNC), and from said radio network controller (RNC) via said serving GPRS support node (SGSN) to said gateway GPRS support node (GGSN), said internet packet comprises a header that comprises an address (IP-T) of said terminal (T), **characterized** in that said gateway GPRS support node (GGSN)

30   comprises for the event of downstream transporting of said internet packet :

- first transforming means (TRANS1) to transform said header into a backbone header; and

- first inserting means (INS1) to insert in said backbone header an address of said serving support node; and

5   - first forwarding means (FORW1) to forward said internet packet from said gateway GPRS support node (GGSN) to said serving GPRS support node (SGNS) according to a respective address in said backbone header being said address of said serving support node and to enable thereby said serving GPRS support node (SGSN) to forward

10   said internet packet to said radio network controller (RNC); and

- first comprising means (COMPR1) to comprise in said internet packet an address extension header (EXT); and

- first extension inserting means (EXT_INS1) to insert in said address extension header (EXT) said address of said terminal (IP-T)

15   thereby keeping said address of said terminal (IP-T) during said forwarding and enabling said radio network controller (RNC) to recuperate said address of said terminal and to further forward said internet packet to said terminal (T) according to said address of said terminal (IP-T);

20   and that said gateway GPRS support node (GGSN) comprises for the event of upstream transport of said internet packet :

- second transforming means (TRANS2) to transform said backbone header into said header; and

- first extracting means (XTRACT1) to extract from said

25   address extension header (EXT) said address of said terminal (IP-T) and to insert said address of said terminal (IP-T) again in header in order to enable further forwarding of said internet packet to said terminal (T) according to said address of said terminal (IP-T) in said header.

30   10. A radio network controller (RNC) in a Generic Packet Radio System backbone network to downstream transport and to upstream

transport an internet packet being destined to a terminal (T), respectively, from a gateway GPRS support node (GGSN) via a serving GPRS support node (SGSN) to said radio network controller (RNC), and from said radio network controller (RNC) via said serving GPRS support

5   node (SGSN) to said gateway GPRS support node (GGSN), said internet packet comprises a header that comprises an address (IP-T) of said terminal (T), **characterized** in that said radio network controller (RNC) comprises for the event of upstream transport of said internet packet :

- third transforming means (TRANS3) to transform said header

10   into a backbone header; and

- second inserting means (INS2) to insert in said backbone header an address of said serving support node ; and

- second forwarding means (FORW2) to forward said internet packet from said radio network controller (RNC) to said serving support

15   node (SGNS) according to a respective address in said backbone header being said address of said serving support node and to enable thereby said serving GPRS support node (SGSN) to forward said internet packet to said gateway GPRS support node (GGSN); and

- second comprising means (COMPR2) to comprise in said

20   internet packet an address extension header (EXT); and

- second extension inserting means (EXT_INS2) to insert in said address extension header (EXT) said address of said terminal (IP-T) thereby keeping said address of said terminal (IP-T) during said forwarding and enabling said gateway GPRS support node (GGSN) to

25   recuperate said address of said terminal (IP-T) and to further forward said internet packet to said terminal (T); and that said radio network controller (RNC) comprises for the event of downstream transport of said internet packet :

- fourth transforming means (REPL4) to transform said

30   backbone header into said header; and

- second extracting means (XTRACT2) to extract from said address extension header (EXT) said address of said terminal (IP-T) and to insert said address of said terminal (IP-T) again in said header in order to enable further forwarding of said internet packet to said

5   terminal (T) according to said address of said terminal (IP-T) in said header.

11. A serving GPRS support node (SGSN) in a Generic Packet Radio System backbone network to downstream transport and to

10   upstream transport an internet packet being destined to a terminal (T), respectively, from a gateway GPRS support node (GGSN) via said serving GPRS support node (SGSN) to a radio network controller (RNC), and from said radio network controller (RNC) via said serving GPRS support node (SGSN) to said gateway GPRS support node (GGSN), said internet packet

15   comprises a header that comprises an address (IP-T) of said terminal (T), **characterized** in that said serving GPRS support node (SGSN) comprises:

- third inserting means (INS3) to insert, upon reception of said internet packet, in a backbone header of said packet, for the event of

20   downstream transport of said internet packet (IP), an address of said radio network controller (RNC); and for the event of upstream transport of said internet packet an address of said gateway GPRS support node (GGSN); and

- third forwarding means (FORW3) to forward said internet

25   packet according to said respective address in said backbone header being   for the event of downstream transport of said internet packet said radio network controller (RNC) and being for the event of upstream transport of said internet packet said gateway GPRS support node (GGSN).

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12. A Generic Packet Radio System backbone network to transport an internet packet being destined to a terminal (T) between a gateway GPRS support node (GGSN) via a serving GPRS support node (SGSN) and a radio network controller (RNC), **characterized** in that said

5   Generic Packet Radio System backbone network comprises anyone of a gateway GPRS support node (GGSN) according to claim 9, a serving GPRS support node (SGSN) according to claim 11, and a radio network controller (RNC) according to claim 10.